UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/566,937	02/02/2006	Thomas T. Oswald	62781A	9887

109 7590 09/21/2009

The Dow Chemical Company
Intellectual Property Section
P.O. Box 1967
Midland, MI 48641-1967

EXAMINER	
KRYLOVA, IRINA	
ART UNIT	PAPER NUMBER
1796	

MAIL DATE	DELIVERY MODE
09/21/2009	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/566,937	OSWALD ET AL.	
	Examiner	Art Unit	
	Irina Krylova	1796	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *13 January 2009*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-31* is/are pending in the application.

4a) Of the above claim(s) *18-31* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-17* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☒ Claim(s) *1-31* are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *11/03/06; 07/10/06*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

1. Please note that the examiner assigned to the current application has been changed. The new examiner's name and contact information are stated at the end of this action. Applicant is requested to take note of the change.

Election/Restrictions

2. Applicant's election of Group I, claims 1-17 in the reply filed on January 13, 2009 is acknowledged. Because applicant did not distinctly and specifically point out the supposed errors in the restriction requirement, the election has been treated as an election without traverse (MPEP § 818.03(a)). Claims 18-31 are withdrawn from further consideration. Applicant is reminded that upon the cancellation of claims to a non-elected invention, the inventorship must be amended in compliance with 37 CFR 1.48(b) if one or more of the currently named inventors is no longer an inventor of at least one claim remaining in the application. Any amendment of inventorship must be accompanied by a request under 37 CFR 1.48(b) and by the fee required under 37 CFR 1.17(i).

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claim 17 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant

regards as the invention. Claim 17 provides for the use of composition of claim 1, but, since the claim does not set forth any steps involved in the method/process, it is unclear what method/process applicant is intending to encompass. A claim is indefinite where it merely recites a use without any active, positive steps delimiting how this use is actually practiced.

Claim 17 is rejected under 35 U.S.C. 101 because the claimed recitation of a use, without setting forth any steps involved in the process, results in an improper definition of a process, i.e., results in a claim which is not a proper process claim under 35 U.S.C. 101. See for example *Ex parte Dunki*, 153 USPQ 678 (Bd.App. 1967) and *Clinical Products, Ltd.* v. *Brenner*, 255 F. Supp. 131, 149 USPQ 475 (D.D.C. 1966).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. Claims 1-17 are rejected under 35 U.S.C. 103(a) as being unpatentable over **Kale et al** (US 5,773,155) in view of **Winslow et al** (US 5,534,472) and **Kurtz et al** (US 4,339,507).

5. Kale et al disclose a composition having high drawdown and reduced neck-in in extrusion process comprising:

1) 75-95%wt of an ethylene-alpha olefin interpolymer composition selected from the group consisting of substantially linear ethylene polymer composition having melt index in the range of 0.1-50 g/10 min (as to instant claim 5, cited in col. 5, lines 5-13; 46-60);

2) 5-25%wt of a high pressure low density (col. 10, lines 20-25) ethylene homopolymer having a melt index of less than 1 g/10 min (col. 9, lines 50-53); a melt strength of at least 9 cN and a MWD of at least 7.6 (as to instant claim 3, cited in col. 5, lines 5-65; col. 9, lines 45-55).

The melt index of the inventive composition comprises 1-50 g/10 min (as to instant claims 8-10, col. 7, lines 15-20).

6. As to instant claim 7, the high pressure ethylene polymer is produced in an autoclave reactor in a single or multiple zone (col. 9, lines 63-67).

Though **Kale et al** does not specify the temperature of ethylene feed for preparation of LDPE, nevertheless, since **Kale et al** specifies that melt strength of ethylene polymers produced by high pressure polymerization depends on the reaction zone temperature differential (see col. 10, lines 12-16). Therefore, since melt strength of ethylene polymers depend on temperature differential of a reaction zone, such limitation as temperature of ethylene feed becomes a result effective variable, therefore, it would have been obvious to one skilled in the art at the time of the invention was made, to make variations in the temperature of the ethylene feed to obtain the desired melt

strength the polymer composition. *In re Boesch*, 617 F.2d 272, 205 USPQ 215 (CCPA 1980) (MPEP 2144.05 II).

7. The specific examples cited by **Kale et al** disclose substantially linear ethylene polymer having melt index of 4.75 g/10 min and melt strength of 1.3 cN; and LDPE having a melt index of 0.42 g/10 min and melt strength 25.4 cN (see Table 1), which are polymers identical to those disclosed in the instant specification (p. 11, lines 16-25; col. 12, lines 17-22 of instant specification). The ratio between the linear PE and LDPE cited by **Kale et al** is identical to the ratio discussed in the instant invention (p.11, lines 1-7).

8. Kale et al fails to specify the LDPE being long-chain branched.

9. Kurtz et al discloses a polymer composition comprising:

1) 20-98%wt of high pressure LDPE homopolymer;

2) 2-80%wt of a linear low density ethylene hydrocarbon copolymer (Abstract).

10. The linear low density ethylene copolymers comprise melt index of more than 10 but less than 100 (col. 8, lines 42-47) and MWD of 2.7-4.1 (col. 8, lines 48-53).

11. The specific example provides a composition comprising:

A) 75% of linear low density ethylene-butene copolymer having melt index of 20 g/10 min (Table 1, col. 11, lines 15-31);

B) 25% of high pressure LDPE prepared in autoclave (as to instant claim 7) having a melt index of 4.36 g/10 min,

wherein the composition comprises melt index of 13.5 g/10 min (as to instant claims 8-10, cited in Table 1).

12. **Kurtz et al** teaches that by blending linear low density ethylene copolymers with high pressure LDPE, extrusion coating compositions are provided which are capable of high draw-downs without draw resonance or melt breakage (col. 4, lines 50-55). **Kurtz et al** also recites the importance of long chain branching in high pressure LDPE (col. 5, lines 1-2). In extrusion coating two aspects of rheological behavior are important: shear and extension (col. 5, lines 2-3). As the extrusion screw pumps the melt to and through the extrusion die, the melt experiences a wide range of shear rates. As the shear rate is increased, viscosity decreases (col. 5, lines 5-15). The degree of viscosity decrease depends upon molecular weight, its distribution and long chain branching. Broad molecular weight distribution and long chain branching show enhanced shear thinning behavior (col. 5, lines 15-23).

13. Since

1) **Kale et al** disclose a composition having high drawdown and reduced neck-in comprising 75-95%wt of an ethylene-alpha olefin interpolymer composition selected from the group consisting of substantially linear ethylene polymer composition having melt index in the range of 0.1-50 g/10 min, and 5-25%wt of a high pressure low density

ethylene homopolymer having a melt index of less than 1 g/10 min, a melt strength of at least 9 cN and a MWD of at least 7.6, wherein he melt index of the inventive composition comprises 1-50 g/10 min; but fails to specify the LDPE being long chain branched;

2) Kurtz et al disclose a polyethylene composition, similar to the composition of **Kale et al** but specifies the importance of the LDPE being branched for producing having high draw-down and low neck-in extruded products;

therefore,

it would have been obvious to a one of ordinary skill in the art at the time of the invention was made to use the long chain branched LDPE of **Kurtz et al** in the composition of **Kale et al** to further improve extrusion processibility of the polyethylene composition of **Kale et al**.

14. Though **Kale et al** in view of **Kurtz et al** fail to specify the rheology of the composition such that the slope determined by linear least squares regression of a plot of natural log of loss of modulus (G") versus natural log of storage modulus (G') being greater than [0.635*(melt index)+13.2]/(melt index)+16.6], and the composition comprising CDF RI fraction less than 0.23 which having a molecular weight above 85,000 g/mol and CDF LS fraction of more than 0.07 at a conventional GPC molecular weight of 1,750,000 g/mol or greater;

nevertheless,

1) since the plot of natural log of G' versus natural log of G" depends upon MWD and long chain branching of polymers (as disclosed by **Winslow et al** in col. 9, lines 65-67),

2) it is known in the art that rheology, which by definition is a study of a flow of matter such as polymers and thus is a guide to polymer processability in the molten state (see col. 9, lines 46-50 of **Winslow et al**), depends on melt index and melt strength of the polymer composition,

3) the polymer composition of **Kale et al** in view of **Kurtz et al** is having melt index and melt strength identical to those of the composition claimed in the instant invention, therefore,

it would have been obvious to a one of ordinary skill in the art at the time of the invention was made that the composition of **Kale et a**l in view of **Kurtz et al** will intrinsically have the rheology, such as the slope, determined by linear least squares regression of a plot of natural log of loss of modulus (G") versus natural log of storage modulus (G'), and CDF RI fraction and CDF LS fraction, identical to those claimed in the instant invention.

15. Claims 1-17 are rejected under 35 U.S.C. 103(a) as being unpatentable over **Oswald et al** (US 2003/0032731) in view of **Winslow et al** (US 5,534,472)

16. Oswald et al discloses a blend of:

A) linear ethylene homopolymer or interpolymer (as to instant claim 5);

B) a branched homopolymer or interpolymer;

wherein the blend comprises:

1) a melt index of 0.05-20 g/10 min (as to instant claims 8-10);

2) a melt strength of equal or more than 2 (as to instant claim 2, cited in Abstract).

17. The branched polymer comprises LDPE having broad molecular weight distribution (as to instant claims 3, 6, cited in [0054]) prepared in autoclave reactors in a single phase mode (as to instant claim 7, cited in [0053] and co.2; lines 45-60 of US 4,599, 392 incorporated in **Oswald et al** by reference).

18. The composition is used in extrusion processes ([0083]).

19. Though **Oswald et al** fail to specify the rheology of the composition such that the slope determined by linear least squares regression of a plot of natural log of loss of modulus (G") versus natural log of storage modulus (G') being greater than [0.635*(melt index)+13.2]/(melt index)+16.6], and the composition comprising CDF RI fraction less than 0.23 which having a molecular weight above 85,000 g/mol and CDF LS fraction of more than 0.07 at a conventional GPC molecular weight of 1,750,000 g/mol or greater; nevertheless,

1) since the plot of natural log of G' versus natural log of G" depends upon MWD and long chain branching of polymers (as disclosed by **Winslow et al** in col. 9, lines 65-67),

2) it is known in the art that rheology, which by definition is a study of a flow of matter such as polymers and thus is a guide to polymer processability in the molten state (see

col. 9, lines 46-50 of **Winslow et al**), depends on melt index and melt strength of the polymer composition,

3) the polymer composition of **Oswald et al** is identical to the composition claimed in the instant invention, including having melt index and melt strength identical to those of the composition claimed in the instant invention,

therefore,

it would have been obvious to a one of ordinary skill in the art at the time of the invention was made that the composition of **Oswald et al** will intrinsically have the rheology, such as the slope, determined by linear least squares regression of a plot of natural log of loss of modulus (G") versus natural log of storage modulus (G'), and CDF RI fraction and CDF LS fraction, identical to those claimed in the instant invention.

20. Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over **Oswald et al** (US 2003/0032731) in view of **Winslow et al** (US 5,534,472) as applied to claim 1 above, in further view of **Kale et al** (US 5,773,155).

21. The discussion with respect to **Oswald et al** (US 2003/0032731) in view of **Winslow et al** (US 5,534,472) set forth in paragraphs 15-19 above, is incorporated here by reference.

22. Oswald et al in view of **Winslow et al** fail to teach LDPE produced in autoclave in a single phase mode , further being produced using a chilled ethylene feed below 35°C.

23. **Kale et al** discloses high pressure ethylene polymer (LDPE) produced in an autoclave reactor in a single or multiple zone (col. 9, lines 63-67). **Kale et al** further teaches that melt strength of ethylene polymers produced by high pressure polymerization depends on the reaction zone temperature differential (see col. 10, lines 12-16). Therefore, since melt strength of polymers depend on temperature differential of a reaction zone, such limitation as temperature of ethylene feed becomes a result effective variable, therefore, it would have been obvious to one skilled in the art at the time of the invention was made, to make variations in the temperature of the ethylene feed to obtain the desired melt strength the polymer composition composition. *In re Boesch*, 617 F.2d 272, 205 USPQ 215 (CCPA 1980) (MPEP 2144.05 II).

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Irina Krylova whose telephone number is (571)270-7349. The examiner can normally be reached on Monday-Friday 7:30am-5pm EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Vasudevan Jagannathan can be reached on (571)272-1119. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Irina Krylova/
Examiner, Art Unit 1796

/Vasu Jagannathan/
Supervisory Patent Examiner, Art Unit 1796